Indian Tribal Sovereignty and Water Resources: Watersheds, Ecosystems and Tribal Co-Management

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I. INTRODUCTION

Rivers are the quintessential transboundary resource, and by their nature raise the thorniest interjurisdictional questions between nations, whose borders they demarcate, cross and recross. Within the United States, these interjurisdictional questions acquire additional layers of complexity. U.S. federal law recognizes and protects three sources of sovereign governmental authority: that of the individual states, that of the federal government, and that of the various Indian tribes located within U.S. borders. The relationship between the latter of these sovereign entities and the other two U.S. Constitutional entities[1] has been described by the U.S. Supreme Court as "anomalous" and "complex."[2]

The form and practice of Indian tribal sovereignty is perhaps unlike any other sovereignty that currently exists, and that particularity has significant implications for the interjurisdictional management of the nation's waterways. Yet, while this particularity raises complex questions, it also suggests ways of thinking outside the box of traditional territorial sovereignty.[3] The interjurisdictional issues presented by Indian tribal authority within the U.S. system may point the way towards a new means of approaching the unique and pressing ecological problems facing the use and abuse of transboundary natural resources.

The nature and acceptance of Indian tribes as sovereign entities, with governmental authority over people, territory and natural resources, is the core issue in the complex and often contested field known as federal Indian law. And, not surprisingly, tribal authority over rivers and other transboundary waterways

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[1] As discussed in more detail below, Indian tribes are recognized under U.S. law as sovereigns whose existence and political authority pre-dates, and is therefore not generally constrained by, the U.S. Constitution. *See, e.g.*, Talton v. Mayes, 163 U.S. 376 (1896) (Indian tribal governments not subject to restrictions contained in U.S. Constitution Bill of Rights).

[2] United States v. Kagama, 118 U.S. 375, 381 (1886) ("[t]he relation of the Indian tribes living within the borders of the United States, both before and since the Revolution, to the people of the United States has always been an anomalous one and of a complex character.").

[3] A number of contemporary writers argue for new approaches to transboundary ecological problems, asserting that existing notions of absolute territorial sovereignty over natural resources present a significant obstacle to dealing effectively with such problems. *See generally* THOM KUEHLS, BEYOND SOVEREIGN TERRITORY: THE SPACE OF ECOPOLITICS (1996).

was and remains one of the most hotly contested areas. Yet through this conflict, certain anomalous principles have emerged. Primary among these principles is that tribal sovereignty—particularly where such sovereign authority is exercised to protect the health and welfare of Indian people and the natural resources upon which such health and welfare depends—is not strictly circumscribed by traditional notions of sovereign territoriality.

This paper will address these principles and consider their application in the interjurisdictional context of rivers and river management. Section II will present a brief background of the unique legal status of Indian tribal sovereignty, including its significant extraterritorial elements. Section III will discuss four modalities of tribal governmental authority over waters and waterways, both within and without tribal territorial boundaries. Section IV will present some of the particular issues that are raised by the existence and exercise of tribal sovereign authority over water and waterways. Finally, the conclusion will set out some principles for the development of an integrated, co-management approach for dealing with the interjurisdictional issues raised by tribes and tribal authority, principles which may be applicable for dealing with similar issues on an international basis.

II. TRIBAL GOVERNMENTAL AUTHORITY: SOVEREIGNTY AND TERRITORIALITY

Indian tribal governmental authority derives from the tribes' status as recognized sovereign entities within the U.S. federal system.[4] The sovereign status of tribes, however, has been an area greatly contested, particularly by the states within whose borders various tribes reside. The give and take over time, from the first decisions by the U.S. Supreme Court articulating the principles of inherent tribal sovereignty,[5] through various oscillations in U.S. policy,[6] and up through the present emphasis on tribal self-determination, has lead to the development of the complex and highly particularized field known as "federal Indian law."[7]

While a full discussion of federal Indian law is far beyond the scope of this article, three particular aspects of tribal sovereignty are critical to a

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[4] *See, e.g.*, United States v. Mazurie, 419 U.S. 544, 557 (1975) ("Indian tribes are unique aggregations possessing attributes of sovereignty over both their members and their territory . . . . Indian tribes within Indian country are a good deal more than private, voluntary organizations . . . .") (citations omitted).

[5] *See* Worcester v. Georgia, 31 U.S. (6 Pet.) 515 (1832).

[6] For a concise discussion of these oscillations, which represented radical shifts between respect for tribal sovereignty and attempts to undermine tribal existence, see VINE DELORIA, JR. & CLIFFORD M. LYTLE, AMERICAN INDIANS, AMERICAN JUSTICE 1–24 (1983).

[7] *See generally* FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW (Michie Bobbs-Merrill 1982) (the authoritative treatise concerning the field of federal Indian law).

discussion of tribal governmental authority over water and waterways: (1) the nature and source of tribal sovereignty; (2) the ability of tribes to exercise governmental authority over the activities of non-Indians; and (3) the complex relationship between tribal authority and territory.

A. The Nature and Source of Tribal Sovereignty

While "sovereignty" is a European term, its form and shape as a national and international legal doctrine growing from a particular historical moment in Europe,[8] Indian tribes have long been referred to and recognized as "sovereign nations" as a result of the contact with the European colonial powers.[9] The initial contacts between European nations and tribes, as well as between the U.S. and tribes, though fraught with its own ethnocentric history, was in fact based on a recognition of a government-to-government relationship between sovereign entities.[10] The U.S. began its existence with treaty-based tactical alliances with Indian tribes as well as entering numerous treaties for the cession of lands.[11]

The basic principles concerning tribal sovereignty in U.S. case law[12] were articulated in a series of Supreme Court opinions authored by Chief Justice John Marshall in the early 1800s (commonly known as the "Marshall trilogy").[13] Through these three opinions, the Supreme Court articulated the basic principles

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[8] While the concept of sovereignty as the source of governmental power and authority had been discussed at least as early as the days of the Roman empire, sovereignty as a significant subject of political discourse began in the European Middle Ages. *See* R.R. PALMER, A HISTORY OF THE MODERN WORLD 10 (4th ed. 1971); EVAN LUARD, TYPES OF INTERNATIONAL SOCIETY 312–29 (1976).

[9] *See Worcester*, 31 U.S. (6 Pet.) at 559 (noting that the word "nation" is not a word used by the Indian communities, but rather is a "word[] of our own language, selected in our diplomatic and legislative proceedings"). Of course, in a broadly defined sense, the indigenous communities of the Americas exercised sovereignty long before Europeans "discovered" the Western Hemisphere, in that such communities were self-determining, exercised authority over their own affairs, and developed institutions for law and order, distribution and/or allocation of resources and resolution of disputes. *See* Kirke Kickingbird et al., *Indian Sovereignty: What is Sovereignty?*, *in* NATIVE AMERICANS AND THE LAW: NATIVE AMERICAN SOVEREIGNTY 2–3 (John R. Wunder ed., 1996).

[10] *See, e.g.*, COHEN, *supra* note 7, at 53–127. For example, the 1778 Treaty between the rebelling Colonies and the Delaware Indians was later described by Chief Justice John Marshall: "[I]n its language, and in its provisions, is formed, as near as may be, on the model of treaties between the crowned heads of Europe." *Worcester*, 31 U.S. (6 Pet.) at 550. *See* Treaty with the Delawares, Sept. 17, 1778, U.S.-Delaware Nation, 7 Stat. 13.

[11] *See* COHEN, *supra* note 7, at 53–55.

[12] For the purposes of this article, I will focus only on the definitions and status of tribal sovereignty under U.S. law. Many tribal communities have, however, developed their own definitions and conceptions of sovereignty, which may differ in significant ways from how this sovereignty has been developed and imposed from without. The interface and friction between U.S. law and tribal views and practices of sovereignty is the subject of a growing literature. *See generally* SIDNEY L. HARRING, CROW DOG'S CASE: AMERICAN INDIAN SOVEREIGNTY, TRIBAL LAW, AND UNITED STATES LAW IN THE NINETEENTH CENTURY (1994); DAVID E. WILKINS, AMERICAN INDIAN SOVEREIGNTY AND THE U.S. SUPREME COURT: THE MASKING OF JUSTICE (1997).

[13] *See* Johnson v. M'Intosh, 21 U.S. (8 Wheat.) 543 (1823); Cherokee Nation v. Georgia, 30 U.S. (5 Pet.) 1 (1831); *Worcester*, 31 U.S. (6 Pet.) 515.

concerning tribal sovereignty. The first and most basic principle is that Indian tribes are political entities whose sovereignty is inherent, not granted by the United States.[14] Second, although certain aspects of tribal sovereignty have been diminished or lost through "discovery and conquest"[15] and the "dependent" status of tribes,[16] all those powers not lost or otherwise diminished are retained by the tribes.[17] Third, that one of the attributes not diminished was the right of the tribes—not the states—to make and enforce the laws that would apply within tribal territory.[18]

These basic principles of inherent tribal sovereignty are still good law today.[19] Tribes are recognized as governments, with authority over their territory and over their people.[20] Inherent tribal sovereignty is still recognized as a source of tribal governmental authority.[21] Congress and the Executive branch have, since the early 1970s, implemented and supported a policy of tribal self-government and self-determination.[22] However, U.S. policies have also resulted in the

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[14] *See Worcester*, 31 U.S. (6 Pet.) at 542–43 ("America, separated from Europe by a wide ocean, was inhabited by a distinct people, divided into separate nations, independent of each other and of the rest of the world, having institutions of their own, and governing themselves by their own laws."). *See also id.* at 559–60.

[15] *Johnson*, 21 U.S. (8 Wheat.) at 574 (holding that discovery and conquest by the European powers and the United States diminished tribal ability to freely alienate tribal lands). For two critiques of the concepts of discovery and conquest articulated in *Johnson*, see WILKINS, *supra* note 12, at 27–35; ROBERT A. WILLIAMS, THE AMERICAN INDIAN IN WESTERN LEGAL THOUGHT: THE DISCOURSES OF CONQUEST (1990).

[16] *See Cherokee Nation*, 30 U.S. (5 Pet.) at 18 (holding that Cherokee Nation is not a "foreign state" for bringing an original action in the U.S. Supreme Court against one of the United States).

[17] *See Worcester*, 31 U.S. (6 Pet.) at 560–61.

[18] *See id.* at 551–63. Marshall's opinion involved a close and careful reading of the Cherokee treaties to determine which attributes of sovereignty had been granted away, and found that the tribe's right to enforce its own laws in its own territory—and to prevent the application of Georgia's laws within that territory—remained in full force.

[19] *See, e.g.*, United States v. Wheeler, 435 U.S. 313, 323 (1978) (holding that successive criminal prosecutions of a tribal member by the United States and the tribe do not constitute double jeopardy because tribal criminal jurisdiction over tribal members flowed from the tribe's inherent sovereignty and not from a delegation of powers from the United States).

[20] *See, e.g.*, Williams v. Lee, 358 U.S. 217 (1959) (stating that tribal court has exclusive jurisdiction over on-reservation contract dispute involving Indian defendant and non-Indian plaintiff); Fisher v. District Court, 424 U.S. 382 (1976) (holding that tribal court has exclusive jurisdiction over an adoption proceeding involving tribal members on-reservation).

[21] *See* Montana v. United States, 450 U.S. 544, 565–66 (1981) (stating that although there is a presumption against tribal regulation of non-Indian hunting and fishing on non-Indian lands and waters on reservation, inherent tribal sovereignty is a source of such regulatory authority under certain specified exceptions).

[22] *See, e.g.*, Indian Self-Determination and Education Assistance Act, 25 U.S.C. §§ 450–450n, 455–458c (1994) (providing for direct tribal operation of programs run by federal government to benefit Indians); Indian Governmental Tax Status Act, 26 U.S.C. § 7871 (1994) (providing for the recognition by the IRS of tribes as governments for tax and public finance purposes); Special Message to the Congress on Indian Affairs, 1970 Pub. Papers Doc. 213 (July 8, 1970), *reprinted in* DAVID H. GETCHES ET AL., FEDERAL INDIAN LAW (3d ed. 1993) (recognizing government-to-government relationship with tribes and urging Congress to adopt self-determination legislation); Remarks to Native American and Native Alaskan Tribal Leaders, 1994 Vol. I Pub. Papers 800–803 (April 29, 1994) (reaffirming policy of government-to-government coordination with Indian tribes).

significant influx of non-Indians onto lands originally reserved by the tribes for their exclusive homelands, raising thorny jurisdictional questions that the courts continue to grapple with today. The question of tribal governmental authority over non-Indians is particularly relevant to issues concerning management of transboundary, as well as thoroughly intra-reservation, waterways.

B. Tribal Authority Over Non-Indians

Most Indian tribes who entered into land cession agreements with the United States did so with the understanding that the reserved land was set aside as a permanent homeland, in which they would make and be governed by their own laws and would be free from interference and settlement by non-Indians.[23] That understanding was shattered by the U.S. policy of "allotment."[24] Allotment involved taking reservation land that was held by tribes and allotting it in individual parcels to individual tribal members who would, the theory went, become farmers.[25] The remainder of the reservation land not allotted was then declared "surplus," and was disposed of by sale or transfer to non-Indians.[26] Allotment resulted in a massive transfer of tribal land out of tribal ownership into individual, largely non-Indian ownership.[27] The miscellany of land ownership turned many reservations into patchworks or "checkerboards" of variously held land parcels.[28]

The jurisdictional disputes arose from the strong resistance by states and their non-Indian citizens to tribal tax, regulatory, and adjudicatory jurisdiction over non-Indians on-reservation. The resulting jurisprudence has led to a jurisdictional maze concerning tribal authority over the conduct of non-Indians on-reservation, authority which largely depends on where such conduct takes place on-reservation. Generally, tribes may exercise civil regulatory authority

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[23] *See, e.g.*, CHARLES WILKINSON, AMERICAN INDIANS, TIME AND THE LAW 14–19 (1987) (discussing tribal expectations regarding "measured separatism").

[24] For an in-depth discussion of the policy of allotment, its impacts to the tribal land base, and its subsequent jurisdictional implications, see Judith V. Royster, *The Legacy of Allotment*, 27 ARIZ. ST. L.J. 2 (1995). The main allotment statute is commonly referred to as the "General Allotment Act" or the "Dawes Severalty Act," 25 U.S.C. §§ 331–34, 339, 341–342, 348–349, 354, 381 (1994). This legislation was described by Theodore Roosevelt as "a mighty pulverizing engine to break up the tribal mass." Theodore Roosevelt, First Annual Message (Dec. 3, 1901), *in* 2 The State of the Union Messages of the President, 1790–1966, at 2047 (Fred L. Israel ed., 1966).

[25] *See* Royster, *supra*, note 24, at 7–9.

[26] *See id.* at 13–14.

[27] During the nearly fifty-year period that the allotment policy was in effect, the tribal land estate nationally was reduced from 138 million acres to 52 million acres. *See id.* at 10–14. Sixty million of the acres lost were the lands declared to be "surplus," which were either opened to non-Indian homesteading or sold by the federal government to non-Indians. *See id.* at 13–14. In addition, 26 million acres that had originally been allotted to individual Indians were transferred to non-Indians via purchase, fraud, mortgage foreclosures and tax sales. *See id.* at 10–12.

[28] *See* WILKINSON, *supra* note 23, at 8–9, 19.

over the conduct of non-Indians on tribal lands.[29] On the other hand, there is a general presumption against tribal regulation of the conduct of non-Indians on non-Indian lands.[30] However, the Supreme Court has articulated two "exceptions" to this presumption, which flow from the tribes' "inherent sovereignty:" tribes can regulate the conduct of non-Indians (1) where the non-Indians have entered into "consensual relationships with the tribe or its members, through commercial dealing, contracts, leases, or other arrangements," or (2) where the conduct of the non-Indians "threatens or has some direct effect on the political integrity, the economic security, or the health or welfare of the tribe."[31] As discussed below, courts have found that impacts to reservation water quality implicate this second exception, supporting a finding of tribal authority over non-Indian conduct under the Clean Water Act.[32]

C. Tribal Authority Off-Reservation

Even more relevant in the context of protection of transboundary water resources, the tribes' ability to exercise jurisdictional authority is not strictly limited by tribal borders. In the complex and anomalous context of the relationship between tribes and the United States, inherent tribal sovereignty has been recognized as a source of tribal extraterritorial governmental authority. The Supreme Court recently held that the sovereign immunity of Indian tribes—an incident of tribal sovereign governmental authority—applies to activities of Indian tribes undertaken outside reservation boundaries.[33] This extraterritorial viability of sovereign immunity is an aspect of sovereignty that the individual states do not possess.[34]

The tribal reservation of certain rights—usually hunting and fishing rights—on lands they were otherwise ceding has contributed a significant element

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[29] *See, e.g.*, New Mexico v. Mescalero Apache Tribe, 462 U.S. 324 (1983) (holding that tribe has exclusive authority to regulate hunting and fishing of nonmembers on tribal lands on reservation). However, tribes cannot exercise criminal jurisdiction over non-Indians anywhere on-reservation. *See* Oliphant v. Suquamish Indian Tribe, 435 U.S. 191 (1978).

[30] *See Montana*, 450 U.S. at 565 (describing presumption that tribe cannot regulate non-Indian hunting and fishing on non-Indian lands and waters on reservation); Strate v. A-1 Contractors, 520 U.S. 438 (1997) (holding that tribal court lacks jurisdiction over non-Indians involved in auto accident on state highway on-reservation).

[31] *Montana*, 450 U.S. at 565. *See also* Brendale v. Confederated Tribes and Bands of the Yakima Indian Nation, 492 U.S. 408 (1989) (holding that in a fractured verdict, that this second exception validated tribal zoning authority over non-Indian owned lands in the "closed" area of the reservation, in which few non-Indians lived).

[32] *See* Montana v. United States E.P.A., 137 F.3d 1135 (9th Cir. 1998).

[33] *See* Kiowa Tribe of Oklahoma v. Manufacturing Techs., Inc., 523 U.S. 651 (1998).

[34] *See* Nevada v. Hall, 440 U.S. 410 (1979) (holding that sovereign immunity does not bar lawsuit brought against State of Nevada in California court to recover for injuries sustained in automobile collision on California highway involving vehicle owned by State of Nevada).

to the recognition of off-reservation sovereignty; many tribes hold reserved rights (as governments in trust for their members) to harvest resources from lands and waters outside reservation boundaries.[35] Because of these tribal off-reservation reserved rights, courts have also upheld the extraterritorial exercise of tribal governmental authority in the natural resources context where such rights are at issue. Tribes that have off-reservation fishing rights have been held to have exclusive authority to regulate the conduct of tribal members exercising those rights off-reservation.[36] Tribes exercising such off-reservation regulatory authority may also, as an incident of such authority, exercise police powers of search and seizure off-reservation.[37] Moreover, the Ninth Circuit has approved a comprehensive fisheries management plan for the Columbia river, in which the tribes with treaty reserved fishing rights on that river participate as co-managers over the river's fisheries.[38]

Congress has also adopted a number of statutes which recognize or authorize tribal governmental authority outside tribal boundaries. For example, the Indian Child Welfare Act of 1978 establishes a presumption in favor of tribal jurisdiction in child custody cases involving Indian children where such children are domiciled off-reservation.[39] Congress has also adopted far reaching legislation protecting Indian tribal interests in Indian burials, human remains and associated funerary objects, which recognizes tribal authority over the disposition of such items whether such items are located on or off-reservation.[40] In the context of the Clean Water Act (CWA), Congress has authorized tribes to be treated as states for the purposes of setting water quality standards, which are enforced off-reservation, where off-reservation sources would impact tribal water supplies.[41]

The inherent sovereignty of Indian tribes is a longstanding precept of federal Indian law. The continued viability of tribal sovereignty, exercised through the tribal governmental powers that have not been diminished, is particularly relevant to the protection and enhancement of the natural resources

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[35] *See, e.g.*, Milles Lac Band of Chippewa v. Minnesota, 526 U.S. 172 (1999) (upholding off-reservation reserved rights of Milles Lac Band of Chippewa Indians); Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658 (1979) (affirming off-reservation reserved rights fisheries of numerous tribes located in Washington state); Kimball v. Callahan, 493 F.2d 564 (9th Cir. 1974); Kimball v. Callahan, 590 F.2d 768 (9th Cir. 1979) (recognizing off-reservation reserved rights of Klamath Tribes).

[36] *See* United States v. Michigan, 471 F. Supp. 192, 271–74 (W.D. Mich. 1979).

[37] *See* Settler v. Lameer, 507 F.2d 231 (9th Cir. 1974).

[38] *See* United States v. Oregon, 699 F. Supp. 1456, 1458 (D. Or. 1988), *aff'd*, 913 F.2d 576 (9th Cir. 1990) (approving a comprehensive agreement among tribes, states and federal government for co-management of Columbia River fisheries).

[39] *See* 25 U.S.C. §1911(b) (1994).

[40] *See* The Native American Graves Protection and Repatriation Act, 25 U.S.C. §§ 3001–3013, 18 U.S.C. § 1170 (1994) (authorizing tribal role in disposition of human remains, funerary items and other cultural resources both on and off-reservation).

[41] *See* 33 U.S.C. §1377(e) (1994); 40 C.F.R. § 131.8(a) (1999).

on which many tribes depend for economic subsistence and cultural continuity. Water is perhaps the most fundamental of such resources. As discussed in the next section, there are various modalities through which the tribal interest in water and waterways is recognized and protected. The integrated, transboundary nature of water resources—in light of this legal backdrop—provides the context for considering the tribal role in integrated management of water resources across political boundaries that continues to present legal and political obstacles to watershed management.[42]

III. MODALITIES OF TRIBAL JURISDICTION AND/OR OWNERSHIP OVER WATER RESOURCES

A number of the various treaties, other government-to-government agreements and Congressional statutes that recognize and affirm tribal sovereignty contain provisions that recognize tribal authority over water resources. The recognition of tribal authority through such government-to-government mechanisms, in light of the backdrop of tribal sovereignty, underscores the role that tribes have to play as governments over protection and enhancement of water resources. These various modalities of tribal authority and/or ownership already cover water resources both on and off the reservation. Each is an expression of the doctrine of inherent tribal sovereignty, held by a government in common for its people and exercised through the authority of that government. The complex relationship of these modalities to the system of U.S. water law, a system from which such modalities both arise from and operate in opposition to, does point toward new ways of conceptualizing our ways of thinking about transboundary water management in general as well as the tribes' specific role within various management regimes.

A. Federal Reserved Water Rights On-Reservation

Few of the treaties with Indian tribes expressly addressed water rights. However, the Supreme Court long ago established special canons of construction for the interpretation of Indian treaties, recognizing the disparity in bargaining power between the parties to the treaty as well as the fact that the treaties were negotiated and written in a language foreign to tribal people. When interpreting the vague and often ambiguous language of these government-to-government agreements, courts must interpret the provisions liberally in favor of the Indians[43]

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[42] For some discussions of the issues and difficulties that political boundaries present to the effective management and protection of transboundary resources like water, see generally TRANSBOUNDARY RESOURCES LAW (Albert E. Utton & Ludwik A Teclaff eds., 1987); KUEHLS, *supra* note 3.

[43] *See* Carpenter v. Shaw, 280 U.S. 363, 367 (1930).

and must give effect to the understanding and expectations of the tribes at the time the agreement was signed.[44]

The Supreme Court has relied upon these canons of construction to establish particular rules for the recognition of tribal reserved water rights on reservation lands. These rules have come to be known as the *Winters* doctrine, after the 1908 case establishing the doctrine of Indian reserved water rights.[45] The *Winters* doctrine provides a striking example of the way in which tribal authority over water both arises within the western prior appropriation doctrine as well as operates in opposition to some key elements of that doctrine.

In *Winters v. United States*, the Supreme Court held that the tribes of the Fort Belknap Reservation in Montana had impliedly reserved water rights to the Milk River through the government-to-government agreement ceding the tribes' aboriginal lands and reserving certain lands to establish the reservation. In the absence of an express provision reserving tribal water rights, the Court held that the agreement must be read to effect the purposes of the reservation and the understanding of the Indians.[46] The Court noted that the purpose of the agreement was to have the tribes settle into an agricultural lifestyle and that, since the reserved lands were arid, without irrigation and a corresponding right to sufficient water the tribes would not be able to use the reservation as farmland.[47]

The *Winters* doctrine not only recognizes a tribal reserved right to use water on-reservation, but it also establishes, in order to fit within the prior appropriation doctrine of "first in time, first in right," the priority date for the tribal right.[48] The priority date for tribal reserved rights, under the *Winters* doctrine, is no later than the date of the creation of the reservation; for existing uses reserved by the tribe, the priority date is "time immemorial," a date which would trump any other claim of priority.[49] The application of the *Winters* doctrine to establish a priority date and method of quantification for the tribal reserved right fits squarely within the prior appropriation system, which seeks to clarify the relationship of competing claims to a scarce resource by prioritizing such claims according to the date of their establishment.[50]

However, the *Winters* doctrine also recognizes that the tribal right is not

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[44] *See* Choctaw Nation v. Oklahoma, 397 U.S. 620, 631 (1970); Tulee v. Washington, 315 U.S. 681, 684–85 (1942); United States v. Shoshone Tribe, 304 U.S. 111, 116 (1938).

[45] *See* Winters v. United States, 207 U.S. 564, 576–77 (1908). The *Winters* doctrine has been repeatedly affirmed as supporting an implied tribal water right on reservation lands to fulfill the purposes of the reservation and the understanding of the Indians.

[46] *See id.* at 577.

[47] *See id.* at 576–77. *See also* Arizona v. California, 373 U.S. 546 (1963), *decree entered*, 376 U.S. 340 (1964).

[48] *Arizona*, 373 U.S. at 599. For a general introduction to the doctrine of prior appropriation, see also 2 WATERS AND WATER RIGHTS 65–124 (1991).

[49] *See Winters*, 207 U.S. 564.

[50] *See, e.g.*, 2 WATERS AND WATER RIGHTS, *supra* note 48, at 65–75.

subject to state laws.[51] The particular requirement of state law from which tribal *Winters* rights are not constrained is the requirement at the heart of the "appropriation" system: that the priority date and quantification are based on the water right claimant actually taking the water out of the waterway and *using* it.[52] Most states with prior appropriation rights doctrine limit appropriative water rights by a requirement of continuing beneficial use, a concept meant to foster the most socially and economically functional uses of water.[53] Under this "use it or lose it system," a water right does not come into existence until the water is actually used; further, non-use of an appropriative right for a certain specified time period results in the loss of the right.[54] Tribal *Winters* rights, however, are not subject to such state laws; they are not based on actual use, but on the intent of reserving the opportunity for use and are therefore not defeated by the fact that tribes have actually appropriated any water.[55]

The scope and measurement of tribal *Winters* rights also differ significantly from rights established under state law prior appropriation systems, or even, in certain ways, other federal reserved rights. The Supreme Court has restricted other federal reserved rights to certain limited purposes for the reservation of the land at issue; water for other than such primary uses must be acquired under state law.[56] Reserved Indian rights are measured somewhat more broadly, and preemption of state law for a broader array of uses is the operative presumption.[57]

Further, unlike prior appropriation rights, which fix measurement of the right at the date of the first use,[58] the measure of Indian rights is not based on the quantity of water actually used *or even potentially usuable* at the time the reservation was established. Rather, Indian reserved rights are based on the amount of water necessary to achieve the reservation's purposes, and must consider not only present but *potential future use*.[59] The scope of the tribal

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[51] *See Arizona*, 373 U.S. at 599.

[52] *See id.*

[53] *See, e.g.*, 2 WATERS AND WATER RIGHTS, *supra* note 48, at 78, 106–16, 443–45.

[54] *See id.* at 436–45.

[55] *See Winters* 207 U.S. at 577. *See also* United States v. Shoshone Tribe, 304 U.S. 111 (1938).

[56] *See* United States v. New Mexico, 438 U.S. 696, 702 (1978) (stating that federal reserved water rights for national forest lands is limited to the water necessary to fulfill "the very purposes" behind the creation of the forests).

[57] *See* COHEN, *supra* note 7, at 580–85. *See also* Colville Confederated Tribes v. Walton, 647 F.2d 42, 47 (9th Cir. 1981) (holding that while applying *New Mexico* primary and secondary purposes distinction, court must infer the primary purposes using the liberal canons of construction applicable when interpreting Indian treaties).

[58] *See, e.g.*, 2 WATERS AND WATER RIGHTS, *supra* note 48, at 430–31 ("It is settled law that enlarged uses [by senior appropriators] are new appropriations that become junior to all others.").

[59] *See Arizona*, 373 U.S. at 600–01 (holding that Chemehuevi Tribe entitled to sufficient water to irrigate all the "practically irrigable acreage" of their agricultural purpose reservation and that such practicality would be measured by present day technology, not that known or even foreseen at the time of the reservation).

reserved right is thus not rigidly fixed by even the potential ability to use the water at a particular time, but can actually expand over that thought possible at the time of the reservation, while the priority date for such appropriation remains the date of the initial reservation of rights.[60]

Tribal water rights are subject to state jurisdiction in one context: a 1952 statute that waived federal sovereign immunity for the purposes of subjecting the federal government to state water-right adjudications[61] has been held to have subjected tribal rights to quantification in such state adjudications.[62] However, tribal reserved rights are still considered federal in nature, must be given full force and effect by the state courts, and are not subject to equitable apportionment or diminishment under state law standards.[63] Tribal water resources, as noted above, are not subject to diminishment or loss through non-use under state law and are considered tribal resources subject to the trust obligation of the United States.[64] Finally, while states, through the McCarran Amendment, have adjudicatory jurisdiction over quantification, regulation of the actual *use* of the tribal reserved water right remains within tribal/federal jurisdiction except in extraordinary circumstances where there is a compelling state interest or federal authorization of state regulation.[65]

Tribes may also use their reserved water rights for any purpose they see fit. In its Supplemental Decree in *Arizona v. California,* the Supreme Court stated that the purpose of the reservation was the methodology for *quantification* of the tribes' water rights; the court ordered that "[t]he foregoing reference to a quantity of water necessary to supply consumptive use required for irrigation . . . shall constitute the means of determining quantity of adjudicated water rights but shall not constitute a restriction of the usage of them to irrigation or other agricultural application."[66] However, as discussed below, whether tribes can convert a

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[60] *See id.*

[61] *See* 43 U.S.C. § 666 (1994) (known as the "McCarran Amendment" after its principal sponsor in the Senate).

[62] *See* Colorado River Water Conservation Dist. v. United States, 424 U.S. 800 (1976). *But see* Stephen M. Feldman, *The Supreme Court's Sovereign Immunity Doctrine and the McCarran Amendment: Toward Ending State Adjudication of Indian Water Rights*, 18 HARV. ENVTL. L. REV. 433 (1994) (arguing that the Supreme Court has followed an improper path in extending jurisdiction over Indian water rights to state courts, and that federal courts should instead be the exclusive forum in which Indian water rights are adjudicated).

[63] *See Colorado River Water Conservation Dist.*, 424 U.S. at 812–13 (holding the Supreme Court stands ready to correct any abuses to tribal rights resulting from state jurisdiction).

[64] *See, e.g.*, Pyramid Lake Paiute Tribe v. Morton, 354 F. Supp. 252 (D.D.C. 1972) (holding Secretary of Interior cannot make "judgment call" regarding tribal water rights that would compromise tribal water rights in order to satisfy needs of non-Indian water users with junior rights). *See also* Arizona, 373 U.S. at 597 (stating tribal water rights not subject to competing equities in other users).

[65] *See Colville Confederated Tribes*, 647 F.2d at 48. *But see* In re Big Horn River System, 835 P.2d 273, 285 (Wyo. 1992) (holding state engineer, not a tribal entity, should decide all issues related to water use on the reservation).

[66] Arizona v. California, 439 U.S. 419, 422 (1979) (supplemental decree).

reserved water right whose quantity is based on a consumptive use to an instream use is still an open question.

The *Winters* doctrine thus arises from, as well as in opposition to, the state prior appropriation systems. The doctrine fixes the tribal right with a priority date in time for the purpose of prioritizing the use and protection of such rights within those systems, while also incorporating principles for recognizing, quantifying and protecting such rights in a manner that appears to contradict certain fundamental principles of those systems. Moreover, they are rights held by sovereign entities within those systems, a sovereignty that is both subsumed to a quantification process administered by the individual states and yet operates outside the general regulatory authority of those same states once the right is quantified. Further, as described in the following section, the *Winters* doctrine also supports the reservation of a right that appears to be fundamentally at odds with a system based on appropriation: instream flows.

B. Reserved Rights to Instream Flows

The *Winters* doctrine has also been applied to find the implied reservation of instream flows on reservation for the purpose of preserving and protecting tribal fisheries.[67] In *United States v. Adair,* the Ninth Circuit held that the Klamath Tribes had reserved sufficient instream water flows in the lakes, rivers and streams of the Klamath Basin to support the tribal fishery reserved by an 1864 Treaty between the Tribes and the United States.[68] The *Adair* court found, further, that this reserved instream flow right, although initially reserved as part of the Klamath Reservation, survived the 1954 "termination" of the Tribes and the transfer of their reservation out of tribal ownership.[69] The Klamath Tribe's right, while not yet quantified, is a right to maintain sufficient instream flows to support the present-day tribal fishery.[70]

The Ninth Circuit has also upheld Indian reservation of waters for the protection of fisheries even where the reserved fishery no longer exists. In *Colville Confederated Tribes v. Walton,* the court found that one of the purposes of the Colville Indian reservation was to preserve the tribal fisheries, which historically had been located on the Columbia River.[71] However, despite the

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[67] *See* United States v. Adair, 723 F.2d 1394 (9th Cir. 1983).

[68] *See id.*

[69] *See id.*

[70] *See* United States v. Oregon, 44 F.3d 758, 762 (9th Cir. 1994) (holding Klamath Tribe's water rights subject to quantification in Oregon's combined administrative/adjudicatory system). The Tribes have filed their initial documentation in the state water rights quantification process, but the process is still in its early stages and no quantification has yet occurred. *See* Electronic Mail from Carl Ullman, Klamath Tribe's attorney, to Edmund Goodman (Mar. 31, 1999) (on file with author).

[71] *See Colville Confederated Tribes*, 647 F.2d at 48.

subsequent destruction of the tribal fisheries in the intervening years by the construction of numerous dams, the court found that the water reserved for the fisheries was still part of the tribal reserved right and that the tribe had a priority right to use such water to develop a replacement fishery on reservation.[72]

In upholding tribal instream flows, the courts have also acknowledged that water quality and water quantity are often inextricably interwined. For example, the Federal District Court for the Eastern District of Washington held that the Spokane Tribe's reserved right to sufficient water to preserve the Chamokane Creek fishery included a reserved right to sufficient water to maintain water temperatures at or below those levels necessary for the survival of native trout.[73]

Recognition of tribal instream flow water rights, again, appears to be at odds with the water law regime in most Western states, which favor appropriative uses and have both conceptual and institutional difficulties with instream use.[74] Enforcement of tribal instream flow rights within a regime of appropriation has been notoriously difficult, and as a result, in many instances the instream flow right has languished while junior agricultural and other appropriations continue.[75] The concept of "use" as meaning "appropriation" is deeply embedded in the

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[72] *See id.* The court went on to reverse the district court's ruling that the provision of fingerlings to the Tribes in mitigation of the lost fishery compensated for the right:

> The district court held that water for spawning could not be awarded at this time because the federal government provides the necessary fingerlings. We reverse this holding.
>
> The right to water to establish and maintain the Omak Lake Fishery includes the right to sufficient water to permit natural spawning of the trout. When the Tribe has a vested property right in reserved water, it may use it in any lawful manner. As a result, subsequent acts making the historically intended use of the water unnecessary do not divest the Tribe of the right to the water.

Id.

[73] *See* United States v. Anderson, 591 F. Supp. 1 (E.D. Wash 1979).

[74] *See, e.g.*, 2 WATERS AND WATER RIGHTS, *supra* note 48, at 94–106 (discussing diversion requirements under appropriation systems).

[75] In the Klamath River Basin in southern Oregon and northern California, for example, the operation of the Bureau of Reclamation's Klamath River Irrigation Project has lead to an ongoing dispute with area Indian tribes, who assert that the project's use of water for irrigation is depriving tribes of instream flows necessary to protect their fisheries. *See* Legal Memorandum from Regional Solicitor, Pacific Southwest Region, to Regional Director, Bureau of Reclamation, Mid-Pacific Region, "Certain Legal Rights and Obligations Related to the US. Bureau of Reclamation, Klamath Project for Use in Preparation of the Klamath Project Operations Plan" (July 25, 1995) (on file with author). However, when the Bureau proposed to alter operation of the project to provide some measure of instream flow protection, the State of Oregon Attorney General's office objected, asserting that the federal government had no authority to protect the tribal rights, as the state had not yet quantified the rights through their adjudication process. Letter from Stephen E. A. Sanders, Assistant Attorney General, to Martha Pagel, Director Oregon Department of Water Resources (Mar. 18, 1996) (on file with author). The state's opinion, as articulated in the Sanders letter, is that while the state would regulate "neither in favor of nor against unadjudicated water rights" (i.e., the tribal instream flow rights), the federal government has no authority to change the use of the water in the project, which would result in a *de facto* abrogation of the tribal instream rights until such time as the state completes its adjudication. *Id.*

culture of Western water administration. The legal institutions as well as the on-the-ground infrastructure are, in many instances, simply insufficient to the task of protecting tribal instream flows.[76]

The adjudication of tribal water rights on the Big Horn River in Wyoming demonstrates one aspect of the ongoing conflict between instream rights claimed by tribes and appropriative use. In *Big Horn III*,[77] the Shoshone and Northern Arapaho Tribes of the Wind River Reservation attempted to dedicate a portion of their reserved rights (the quantification of which was based on consumptive uses) to instream flows to protect and enhance fisheries. The Wyoming Supreme Court held that the Tribes did not have the right to enforce such a change of use, thereby requiring the Tribes to use the water for the reserved consumptive purpose (agricultural development) or forfeit the water to other appropriators.[78] While the reasoning of this decision has been sharply criticized as fundamentally at odds with federal Indian law doctrine concerning tribal sovereignty and the limited role of state regulatory authority in Indian country, *Big Horn III* still stands as good law in the state of Wyoming.[79]

The quantity and priority dates of tribal reserved water rights on-reservation make tribes a major factor in any attempt to address water quality and water management issues in a transboundary context. The tribes are sovereign entities with a legal claim to the regulation and use of such reserved water, and as such are a third source of sovereignty (along with the states and federal government) necessary for any comprehensive and integrated approaches. As

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[76] *See, e.g.*, JANIS E. CARPENTER, ENFORCEMENT OF INSTREAM FLOW RIGHTS (Portland, OR: Northwest Water Law & Policy Project 1995) (discussing limitations in existing western water law systems and institutional infrastructure and proposing alternative approaches for protection of instream flow rights) (on file with author).

[77] *In re Big Horn River System*, 835 P.2d 273.

[78] *See id.* The three justices who made up the majority in *Big Horn III* all wrote separately to justify the court's holding. J. Macy reasoned that the quantification process used by the court earlier in the case necessarily limited the Tribe's ability to change their water use from agricultural purposes, since the quantification was expressly based on agricultural uses. *See id.* at 278. J. Macy found it persuasive that the court previously held that the reservation had not been created for fisheries purposes and that an instream flow right had not been reserved. *Id.* J. Thomas, while joining J. Macy's opinion, also wrote a concurring opinion, in which he stated that the key issue in *Big Horn III* centered on who was to regulate the water rights on the reservation. *See id.* at 283–84. J. Thomas felt that the State Water Engineer was charged with enforcing and regulating water use and that the Engineer was bound by state law, which prohibited change of use from appropriation to instream flow. *See id.* Finally, J. Cardine argued that the Tribes must first use their reserved rights for the appropriative purposes for which they were reserved, feeling that it was not "fair" to other appropriators to have one system user not bound by the same prior appropriation rules. *See id.* at 285–87.

[79] *See generally* Wes Williams, Jr., *Changing Water Use for Federally Reserved Indian Water Rights: Wind River Indian Reservation*, 27 U.C. DAVIS L. REV. 501 (1994); Berrie Martinis, Note, *From Quantification to Qualification: A State Court's Distortion of the Law in* In re General Adjudication of All Rights to Use Water in the Big Horn River System, 68 WASH. L. REV. 435 (1993); Peggy Sue Kirk, Note, *Water Law—Indian Law--Cowboys, Indians and Reserved Water Rights: May a State Court Limit how Indian Tribes Use Their Water?* In re The General Adjudication of All Rights to Use Water in the Big Horn River System, 28 LAND & WATER L. REV. 467 (1993).

discussed in the next section, the tribal rights go even further than on-reservation waters, extending to claims over water quantity and quality outside reservation boundaries to protect reserved rights to fish.

C. Fishing Rights and Environmental Servitude to Quality and Quantity

Tribal reserved rights to hunt and fish off-reservation also create another source of tribal rights to participate in the management of water quality and quantity. Many tribes, when ceding the large expanse of their aboriginal territory, explicitly reserved the right to continue to hunt, fish, trap and gather on the lands so ceded.[80] The reservation of such rights has repeatedly been upheld by the federal courts as securing to the tribes and their members the right to continue the exercise of such practices on non-tribal lands and waters in order to maintain an economic livelihood.[81] The courts have also recognized that the loss of tribal lands through "termination" did not extinguish tribal reserved hunting, fishing, trapping and gathering rights on such lands.[82] The Supreme Court has repeatedly upheld the reserved right of tribes to fish in off-reservation waters.[83]

However, while at the time these rights were reserved the resources were sufficiently abundant to allay concerns of competition and/or degradation, the massive influx of non-Indian settlers and the development of the timber, agriculture, commercial fisheries, hydropower and other industries, as well as the expansion of non-Indian residential settlement, has resulted in the significant diminishment of such resources.[84] Intensified competition for the increasingly limited resources further constrained the exercise of the rights that had been reserved in perpetuity only a few generations earlier.[85] It has become increasingly difficult for the tribes and their members to rely on their historic fisheries to fulfill the purposes behind the treaties and other government-to-government agreements: to preserve for the tribes and their members, in exchange for the significant rights they ceded, the opportunity to continue their livelihoods and their cultural and spiritual traditions based on the harvest and use of those resources.[86]

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[80] *See generally Milles Lac Band of Chippewa*, 526 U.S. 172.

[81] *See id. See generally* Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n, 443 U.S. 658 (1979).

[82] *See generally* Menominee Tribe of Indians v. United States, 391 U.S. 404 (1968); Kimball v. Callahan, 493 F.2d 564 (9th Cir. 1974); Kimball v. Callahan, 590 F.2d 768 (9th Cir. 1979).

[83] *See generally* United States v. Winans, 198 U.S. 371 (1905); *Washington*, 443 U.S. at 658.

[84] *See, e.g.*, FAY G. COHEN, TREATIES ON TRIAL: THE CONTINUING CONTROVERSY OVER NORTHWEST INDIAN FISHING RIGHTS 31–51 (1986).

[85] *See id.*

[86] *See id. See also* MARY B. ISELY ET AL., UNCOMMON CONTROVERSY: FISHING RIGHTS OF THE MUCKLESHOOT, PUYALLUP, AND NISQUALLY INDIANS (1970).

The impact of the degradation of water resources on tribal fisheries has been particularly acute. As noted above, in the Pacific Northwest alone, nine stocks of native salmon have recently been listed as threatened or endangered under the Endangered Species Act, all of which are fish that various tribes have a right to harvest pursuant to their reserved rights.[87] The degradation of fisheries through environmental pollution and mismanagement of waterways has lead tribes to assert a right of environmental protection as a part of their reserved rights.

The right to protection of off-reservation fish habitat flows from the legitimate expectation tribes had in reserving such rights—that there would be sufficient resources available to ensure that the rights were meaningful. Indeed, the principles underlying the initial litigation concerning off-reservation hunting and fishing rights clearly suggest as much.[88] Further, the trust obligation owed by the United States to Indian tribes bolsters the claim that the tribes have a legitimate and enforceable expectation that the states and the federal government will not take actions that degrade reserved rights resources and the habitat upon which such resources depend.[89]

In Indian law circles, the proposition that the tribes have a right to prevent habitat degradation has become known as the "Phase II" issue, after the second phase of the *United States v. Washington* fishing rights litigation. In *Washington*, the United States, on its own behalf and as trustee for a coalition of Washington Tribes, filed suit against the State of Washington in federal district court (the tribes themselves intervened in the lawsuit as well), seeking to clarify the meaning and scope of the language in the tribes' various treaties with the United States that guaranteed to the tribes off-reservation rights "to take fish in common with" non-Indian settlers "at all usual and accustomed places."[90]

Phase II of this litigation involved the issue of whether the tribes have a

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[87] *See* Northwest Indian Fisheries Commission, *Treaty Indian Tribes and the Endangered Species Act* (visited Jan. 25, 2000) <http://www.nwifc.wa.gov/esa/>.

[88] *See, e.g.*, Sohappy v. Smith, 302 F. Supp. 899, 910 (1969):

> The Supreme Court has said that the right to fish at all usual and accustomed places may not be qualified by the state. *Puyallup Tribe et al. v. Department of Game et al., supra*, 391 U.S. [392], 398 [1968]. I interpret this to mean that the state cannot so manage the fishery that little or no harvestable portion of the run remains to reach the upper portions of the stream where the historic Indian places are mostly located.

[89] For a thorough analysis of the trust responsibility doctrine, see Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471; Mary Christina Wood, *Protecting the Attributes of Native Sovereignty: A New Trust Paradigm for Federal Actions Affecting Tribal Lands and Resources*, 1995 UTAH L. REV. 109; Mary Christina Wood, *Fulfilling the Executive's Trust Responsibility Toward the Native Nations on Environmental Issues: A Partial Critique of the Clinton Administration's Promises and Performance*, 25 ENVTL. L. 733 (1995).

[90] The Federal District Court split the case ultimately into three phases: the first to deal with the scope and quantity of the tribes' right to fish off-reservation free of state regulation; the third to deal with the tribes' asserted right to harvest shellfish. For a general background on the fishing rights controversy in the Pacific Northwest, see generally, COHEN, *supra* note 84.

broad right to enjoin environmental degradation statewide that could adversely impact anadromous fish habitat and populations.[91] The district court held that the treaty clause reserving the right to fish, which had "overriding importance" to the tribes, "implicitly incorporated . . . the right to have the fishery habitat protected from man-made despoliation . . . .The most fundamental prerequisite to exercising the right to take fish is the existence of fish to be taken."[92] Judge Orrick found that the allocation of sufficient fish to assure the tribes a "moderate living" required the protection of habitat sufficient to ensure sufficient fish so that the tribes could maintain this standard through their commercial fishery.[93]

On appeal, the Ninth Circuit in an *en banc* decision found that the habitat protection issue was not ripe for decision, in that the tribes had sought a broad injunction against the state of Washington against all activities that would harm habitat.[94] The court required that the tribes bring a case alleging specific harms before the case would be ripe for adjudication, and it vacated that part of Judge Orrick's opinion that dealt with habitat protection.[95]

While the Ninth Circuit did not rule on the question, the right to protection of habitat can be reasonably inferred from the existing case law. As Judge Orrick himself noted, the habitat protection was "all but resolved" by the United States Supreme Court in its previous rulings.[96] Judge Orrick was referring to the Supreme Court's rejection of the State of Washington's argument in *Phase I* that the tribes were merely entitled to an opportunity to fish; the Court stated that the relevant treaties ensured the tribes something more tangible than "merely the chance . . . occasionally to dip their nets into the territorial waters."[97]

A number of lower court cases have recognized some right to habitat protection for tribal fisheries. The Confederated Tribes of the Umatilla Indian Reservation were successful in obtaining an injunction against the construction and operation of the Catherine Creek dam in northeastern Oregon that would have

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[91] *See generally* United States v. Washington, 506 F. Supp. 187 (W.D. Wash. 1980).

[92] *Id.* at 203.

[93] *Id.*

[94] *See* United States v. Washington, 759 F.2d 1353, 1357 (9th Cir. 1985) (en banc). The panel also affirmed the district court's hatchery fish allocation.

[95] *See id.* The en banc panel noted that it would be judicially imprudent to make a declaration regarding the right to habitat protection without a case raising concrete facts.

[96] *Id.* at 203–04 (stating that right to habitat protection can be inferred from Supreme Court precedent concerning tribal reserved right to fish).

[97] *Passenger Fishing Vessel*, 443 U.S. at 679. As Judge Orrick noted in his opinion:

> The Supreme Court's use of the term "harvestable" in describing the population of allocable fish did not, contrary to the State's contention, put the tribes at the mercy of any and all, natural and man-made, fluctuations in the resource. The term simply differentiates between the total fish population and those fish subject to allocation under the treaty. The remainder must escape for spawning purposes in order to perpetuate the resource.

Washington, 506 F. Supp. at 204 n.61 (citation omitted).

completely inundated a number of tribal fisheries.[98] Following the logic of *Winans,* Judge Belloni of the District Court of Oregon found that construction of the dam and flooding of the reservoir would jeopardize reserved fishing rights on the Creek because it would entirely eliminate certain fish runs that the tribes relied upon at certain of their "usual and accustomed stations."[99]

In 1973, the Pyramid Lake Tribe of Paiutes in western Nevada successfully sued the Secretary of the Interior to enjoin ongoing water diversions authorized by the Secretary of the Interior because of the impact of such diversions on spawning habitat for the cui-ui, a fish relied upon by tribal members in the exercise of their treaty reserved fishing rights.[100] The court found that in adopting the irrigation project operating regulations and authorizing the diversions, the Secretary had made a "judgment call" that involved balancing various competing interests and attempting an accommodation among those interests "calculated to placate temporarily conflicting claims to precious water."[101] Such attempted accommodation, the court ruled, was a violation of the Secretary's "moral obligations of the highest responsibility and trust" to the Pyramid Lake Paiute Tribe, and that in order to fulfill this fiduciary duty, "the Secretary must insure, to the extent of his power, that all water not obligated by court decree or contract with the District goes to Pyramid Lake."[102]

In 1980, the Yakima Nation sought to protect its reserved right to fish by requesting the Yakima Basin water master to maintain certain water flows in the Yakima River in order to benefit sixty salmon redds (nests of eggs).[103] The flows requested by the Yakima Nation were specifically for the protection of habitat: to prevent the dewatering of the redds and increase their likelihood of survival.[104] The issue of the watermaster's authority and what steps he was required to take was presented to the District Court for the Eastern District of Washington. Judge Quackenbush issued an unpublished decision ordering a number of measures aimed at protecting the redds' habitat.[105] The irrigation districts appealed, and the Ninth Circuit ultimately issued an opinion affirming the measures set out in Judge Quackenbush's order as well as the authority of the District Court to protect the

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[98] *See* Confederated Tribes of the Umatilla Indian Reservation v. Alexander, 440 F. Supp. 553 (D. Or. 1977).

[99] *Id.* at 555. The court held that, absent express Congressional authorization, a federal agency cannot undertake actions that would jeopardize the exercise of reserved rights.

[100] *See generally* Pyramid Lake Paiute Tribe of Indians v. Morton, 354 F. Supp. 252 (D. Nev. 1973). For a description of the history and background of this conflict, see CHARLES F. WILKINSON, CROSSING THE NEXT MERIDIAN: LAND, WATER AND THE FUTURE OF THE WEST 9–15 (1992).

[101] *Pyramid Lake Paiute Tribe*, 354 F. Supp. at 256.

[102] *Id.*

[103] *See* Kittitas Irrigation Dist. v. Sunnyside Valley Irrigation Dist., 763 F.2d 1032, 1033–34 (9th Cir. 1985).

[104] *See id.*

[105] *See id.* (discussing Judge Quackenbush's unpublished opinion).

Yakimas' fishing rights in such a manner.[106]

The concept of a right to sufficient water to maintain tribal reserved rights fisheries has been applied to instream flow claims to support tribal fishing rights. In a case concerning the off-reservation water rights of the Klamath Tribes, the Ninth Circuit held that the Tribes had a reserved right to sufficient instream flow to provide sufficient aquatic habitat to support the tribes' fishing rights.[107] The court found that the Tribes' reserved rights to hunt and fish included the right to sufficient water to ensure that the Tribes would have sufficient hunting and fishing resources to maintain a "moderate living."[108] This right to instream flows, sufficient to provide for fisheries habitat, was found to have survived the termination of the Klamath Tribes[109] and the subsequent transfer of its reservation lands to the ownership of the United States Forest Service and others. The court did recognize the tribe's right to protection of habitat off-reservation.[110]

Other Pacific Northwest tribes have succeeded in asserting rights to water that would protect habitat for on-reservation fisheries.[111] Although the reservation of these rights involved on-reservation fisheries, the rights successfully asserted by the various tribes in some instances involved a burden on waters that flowed off the reservation.[112] Thus, even though the reserved rights of those tribes could only be exercised on-reservation, the courts recognized the supporting need to protect water resources off the reservation.

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[106] *See Kittitas Reclamation Dist.*, 763 F.2d at 1034–35. This opinion was, in fact, the third the Ninth Circuit issued regarding Judge Quackenbush's decision. The first was an unpublished slip opinion that explicitly held that dewatering the redds' habitat was a violation of the reserved fishing right. Kittitas Reclamation Dist. v. Sunnyside Valley Irrigation Dist., No. 80-3505, slip op. (9th Cir. 1982). The second opinion replaced the first, and while affirming the lower court's decision, it stated that the scope of the reserved right need not be addressed. *See* Kittitas Reclamation Dist. v. Sunnyside Valley Irrigation Dist., 752 F.2d 1456 (9th Cir. 1985). This opinion was withdrawn after the en banc decision in the *United States v. Washington Phase II* came down.

[107] *See Adair*, 723 F.2d at 1414–15.

[108] *Id.*

[109] *See* Klamath Termination Act, 25 U.S.C. § 564 (1994 & Supp. IV 1998). The Klamath Tribes were restored to federal recognition in 1986, although the reservation was not returned to tribal ownership. *See* Klamath Indian Tribe Restoration Act, 25 U.S.C. § 566 (1994).

[110] *See Adair*, 723 F.2d at 1414–15; Michael C. Blumm & Brett M. Swift, *The Indian Treaty Piscary Profit & Habitat Protection in the Pacific Northwest: A Property Rights Approach*, 69 U. COLO. L. REV 407, 472 n.319 (1998) (discussing *Adair*).

[111] *See, e.g.*, United States v. Anderson, 736 F.2d 1358 (9th Cir. 1984) (holding that Spokane Tribe's reservation was intended to ensure tribal access to fish for food and maintenance of creek for tribal fishing and that amount of water reserved by Tribe was amount sufficient to preserve such fishery); *Colville Confederated Tribes*, 647 F.2d at 42 (stating that Colville Tribes possessed reserve water rights for the "development and maintenance" of fishing grounds developed by the Tribes to replace the fisheries lost due to the Grand Coulee dam). These and other water rights cases are discussed in detail in Blumm & Swift, *supra* note 110, at 470–78.

[112] *See, e.g.*, *Anderson*, 736 F.2d at 1361 (stating that tribal water rights burden off-reservation users who are upstream of the reservation); *Pyramid Lake Paiute Tribe*, 354 F. Supp. at 256 (holding Secretary prohibited from authorizing diversion of instream flow upriver from reservation to protect fish habitat).

D. The Clean Water Act and Treating Tribes as States

Tribal governmental authority over water quality for on-reservation water resources has been recognized and protected by Congress and by EPA through the Clean Water Act (CWA),[113] adopted initially as the Federal Water Pollution Control Act Amendments in 1972, and subsequently amended in 1977. The CWA is a comprehensive statutory scheme established to meet the goal of "restor[ing] and maintain[ing the] chemical, physical, and biological integrity of [the] Nation's waters."[114] In order to meet this goal, the Act established a system of shared responsibility between the federal government (acting through EPA) and the states.

Under the Act, EPA establishes "effluent limitations," which would restrict the quantities, rates and concentrations of specified substances that are discharged from point sources.[115] States are responsible for designating "water quality standards" for the waterways within their jurisdiction, establishing the desired condition for each waterway.[116] State water quality standards supplement the effluent limitations; in certain instances, discharges permitted under federal effluent limitations may be restricted if necessary to protect the designated water quality for the waterway at issue.[117]

The means of enforcing these standards and limitations is the National Pollution Discharge Elimination System (NPDES), which generally prohibits the discharge of any effluent into a navigable body of water unless the point source obtains an NPDES permit.[118] The Act authorizes two types of NPDES permitting systems: a federal program administered by EPA and state permit programs approved by EPA. The NPDES system is set up specifically to deal with transboundary movement of water and water pollutants: NPDES permit programs and the issuance of such permits in upstream states must meet certain procedural and substantive protections for downstream states.[119] A downstream state whose water quality standards may be adversely impacted by the issuance of an NPDES permit by an upstream state has a right to notice and comment in the permitting process.[120] Further, EPA may prohibit the upstream state from issuing the permit if it would fall outside "the guidelines and requirements" of the Act.[121] While the language of the Act does give EPA discretion when considering whether or not

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[113] 33 U.S.C. §§ 1251–1387 (1994).

[114] *Id.* § 1251(a).

[115] *Id.* §§ 1311, 1314.

[116] *Id.* § 1313.

[117] *See* Arkansas v. Oklahoma, 503 U.S. 91, 101 (1992) (quoting EPA v. California ex rel. State Water Resources Control Bd., 426 U.S. 200, 205 n.12 (1976)).

[118] *See* 33 U.S.C. §§ 1311(a), 1342.

[119] *See id.* § 1341(a)(2) (notice and comment requirements).

[120] *See id.* § 1342(b)(2)(B), (b)(5).

[121] *Id.* § 1342(d)(4).

to enforce a downstream state's request to prohibit an upstream state permit,[122] EPA has the authority under the Act to prohibit discharges if it determines that such discharges would not comply with the downstream state standards.[123]

In 1984, EPA adopted a policy recognizing tribal governments—not the states—as the appropriate authorities for implementing federal environmental laws on Indian reservations, including the CWA.[124] In 1987, Congress amended the CWA specifically to authorize EPA "to treat an Indian tribe as a State for" certain specified CWA purposes.[125] EPA has adopted implementing regulations for treating tribes as states (TAS).[126]

The TAS provisions allow for the exercise of tribal authority in two critical aspects of the Clean Water Act scheme. First, tribes can implement their own on-reservation NPDES permitting system.[127] EPA has determined that water quality is an issue that is significant to the health and welfare of an Indian tribe under the *Montana* exceptions,[128] and, therefore, that tribal permitting authority would extend to non-Indians on non-Indian lands within the reservation boundaries.[129] Second, tribes can establish water quality standards for reservation waterways.[130] As with states in the CWA scheme, tribal establishment of standards gives tribes certain procedural and substantive rights—enforced by EPA—against upstream discharges that could impact water quality in tribal waterways. This aspect of the CWA scheme permits the exercise of tribal authority to impact non-Indians—including state and municipal governments—outside the reservation boundaries. Both aspects of tribal power under the CWA have been upheld by courts.

For instance, in New Mexico, the Isleta Pueblo, an Indian tribe downstream from the City of Alburquerque on the Rio Grande, was granted Clean Water Act TAS status and adopted water quality standards more stringent than

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[122] *See Arkansas*, 503 U.S. at 104–07.

[123] *See id.* at 105.

[124] *See* U.S. EPA, POLICY FOR THE ADMINISTRATION OF ENVIRONMENTAL PROGRAMS ON INDIAN RESERVATIONS (Nov. 8, 1984). For a detailed discussion and analysis of EPA policy and the Clean Water Act, see James M. Grijalva, *Tribal Governmental Regulation of Non-Indian Polluters of Reservation Waters*, 71 N.D. L. REV. 433, 435–38 (1995).

[125] Pub. L. No. 100-4, 101 Stat. 76 (codified at 33 U.S.C. § 1377(e) (1994)).

[126] *See* 40 C.F.R. § 131.8(a) (1999) (CWA TAS provisions). For a detailed discussion of the background and application of these regulations, see Grijalva, *supra* note 124, at 438–55.

[127] *See* 33 U.S.C. § 1377(e).

[128] *See supra* text accompanying notes 32–33.

[129] *See* Amendments to the Water Quality Standards Regulation that Pertain to Standards on Indian Reservations, 56 Fed. Reg. 64,876, 64, 878 (1997) (to be codified at 40 C.F.R. pt.131). As Professor Grijalva describes, EPA determined that Congress, in adopting the somewhat ambiguous language of the Clean Water Act, had not delegated federal authority to tribes via the TAS provision, but rather had required a case-by-case analysis in light of controlling Supreme Court precedent regarding civil regulatory authority of tribal governments. *See* Grijalva, *supra* note 124, at 444–45.

[130] *See* 33 U.S.C. § 1377(e).

those of the state of New Mexico.[131] Albuquerque challenged EPA's approval and subsequent enforcement of those standards—which included requiring changes to Albuquerque's NPDES permit for an upstream wastewater treatment facility—on a variety of grounds, including challenging the authority of EPA to implement more stringent tribal standards against non-Indian entities off-reservation.[132] The court upheld EPA's application of the tribe's standards, expressly holding that the Isleta Pueblo's right to adopt water quality standards more stringent than those of an upstream state was rooted not just in the CWA, but also in the tribe's "inherent sovereignty."[133]

In a similar case, the Ninth Circuit upheld EPA's determination to implement the water quality standards adopted by the Salish and Kootenai Tribes on the Flathead Indian Reservation in Montana.[134] In this case, the state and private landowners directly attacked the underlying EPA TAS regulations, which contained strong presumptions in favor of finding tribal authority. They attacked EPA TAS regulations on the grounds that, under the *Montana* test, EPA's regulations and decisions were inconsistent with a finding of inherent tribal sovereignty.[135] The court rejected the challenge, upholding EPA's general determination that protection of the quality of on-reservation water supplies presumptively met the second *Montana* exception: that inherent tribal sovereignty is a source of authority over non-Indians on non-Indian lands concerning conduct that "threatens or has some direct effect on the political integrity, the economic security, or the health or welfare of the tribe."[136]

IV. IMPLICATIONS FOR LAW AND POLICY

As discussed above, Indian tribes have legally protected rights to certain quantities of water to support their reserved rights, both on and off reservation waterways. Further, tribes have a right to ensure and protect the necessary water quality to protect their members as well as their reserved fishing rights. Such rights, while arising from varied legal sources, have at their core the doctrine of inherent tribal sovereignty: the right of tribes to act as governments to protect the economic security, political integrity, and health and well-being of their people. Since such rights are based in inherent sovereignty, they can involve the affirmative exercise of tribal authority, not merely a negative right to halt others

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[131] *See* City of Albuquerque v. Browner, 97 F.3d 415, 419 (10th Cir. 1996).

[132] *See id.*

[133] *See Albuquerque*, 97 F.3d at 423. However, the court noted that tribe was not regulating the City of Albuquerque, but rather that EPA was "exercising its own authority in issuing NPDES permits in compliance with downstream state and tribal water quality standards." *Id.* at 424.

[134] *See* Montana v. United States E.P.A., 137 F.3d 1135 (9th Cir. 1998).

[135] *See id.* at 1140.

[136] *Id.* at 1140–41 (quoting *Montana*, 450 U.S. at 556).

from actions that would degrade the quantity and quality of resources. The affirmative nature of this right underlies the increased assertion by tribes of a right to participate as co-managers in protection of water resources. The increased tribal role in the allocation and administration of the nation's waters has been described as a "quiet revolution."[137]

The tribal call for co-management helps to recognize the need for integrated, ecosystem management approaches for dealing with transboundary resources.[138] Just how these two issues will dovetail, however, is not clear. The particular and anomalous nature of tribal rights founded in part on inherent sovereignty raises a number of significant questions that are tiered to the varied sources of tribal authority over water resources.

The unique nature and context of these tribal rights also offer some interesting perspectives and approaches to transboundary resource problems. The following subsections discuss some of the questions and issues that arise in the tribal water and waterways context, as well as presenting some of the approaches that this unique situation presents. Ultimately, the issues point toward the necessity of developing institutions for the integration of shared authority, scientific analysis, and policy-making among the various sovereign entities involved.

A. Tribal Reserved Water Rights: Allocation, Quantity and Quality for the Next Millennium

In the arid west, for Indians and non-Indians alike, water resources and economic viability are intimately linked. Any integrated approach to these issues must take note of the economic necessities at the core of western water law—management and policy. The prior appropriation system was developed in the Western United States as a means of allocating—with some degree of certainty and predictability—a moving, transboundary resource whose economic importance in an arid environment was well-understood.[139]

For tribes, their role as shared decision-makers regarding waters and waterways will be directly influenced by the tribal role as an economic player, and vice-versa: tribal economic viability is directly linked to a tribe's ability to

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[137] Michael C. Blumm, *Unconventional Waters: The Quiet Revolution in Federal and Tribal Minimum Streamflows*, 19 ECOLOGY L.Q. 445, 468–79 (1992) (describing assertion of tribal reserved rights and regulatory authority over waters and demonstrating the need for states to accommodate tribes as significant participants in water allocation, administration, and management).

[138] *See, e.g.*, Dante A. Caponera, *Patterns of Cooperation in International Water Law: Principles and Institutions*, *in* TRANSBOUNDARY RESOURCE LAW 1–25 (Albert E. Utton & Ludwik A. Teclaff eds., 1987). *See also* Alberto Szekely, *Transboundary Resources: A View from Mexico*, *in* TRANSBOUNDARY RESOURCE LAW, *supra*, at 211–52.

[139] *See* 2 WATERS AND WATER RIGHTS, *supra* note 48, at 65–81.

protect the quantity and quality of its water resources. The economics of water, particularly the economics of tribal *Winters* rights, is complex. For many western tribes, their *Winters* rights are still rights on paper only, as the tribes have yet to develop the infrastructure necessary to put the water to specific use. The water continues to be used, as it has been for most of this century, for the development and sustenance of non-Indian economic enterprises.[140] This situation has lead to growing calls for allowing tribes to market their reserved rights, so that the tribes might actually receive some economic gain from their paper rights.[141]

Marketing of water rights is a controversial approach to both allocation and protection of water resources. A detailed analysis of the arguments surrounding the issue is well beyond the scope of this article. However, given the reality that water rights marketing is an approach that is continually being implemented, a brief discussion of the interaction among tribal reserved rights, the transboundary nature of waterways, and the various and sundry approaches to marketing is useful.

First, while the use of water marketing (in its various forms) is growing, there exist a number of legal and practical obstacles that prevent tribes from using their reserved water rights in such markets. The most significant legal obstacle is the restriction on alienation of tribal property, which includes water.[142] While Congress has given general consent for tribal transfers of tribal water rights to on-reservation lessees of Indian lands, there is still a great deal of uncertainty concerning the authority to market tribal rights to off-reservation users.[143] Ultimately, it will require Congressional action to permit Indian tribes to market and transfer their rights off-reservation.[144]

The policy implications for such restrictions, however, are complex. While the "trust status" of tribal property was developed initially as a paternalistic policy,[145] the unique status of tribal property ownership has served

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[140] *See* David H. Getches, *Management and Marketing of Indian Water: From Conflict to Pragmatism*, 58 U. COLO. L. REV. 515, 545 (1988) (noting that tribal senior rights will have "little practical effect" on state appropriators so long as the tribal rights go unused).

[141] *See, e.g.*, Christine Lichtenfels, Comment, *Indian Reserved Water Rights: An Argument for the Right to Export and Sell*, 24 LAND & WATER L. REV. 131 (1989); Karen M. Schapiro, *An Argument for the Marketability of Indian Reserved Water Rights: Tapping the Untapped Reservoir*, 23 IDAHO L. REV. 277 (1986).

[142] *See* Nonintercourse Act, 25 U.S.C. §177 (1994) (preventing transfers of Indian trust land without Congressional approval). *See also* Steven J. Shupe, *Indian Tribes in the Water Marketing Arena*, 15 AM. INDIAN L. REV. 185, 197 (1990) (arguing that water rights are included in Nonintercourse Act).

[143] *See, e.g.*, Judith V. Royster, *A Primer on Indian Water Rights: More Questions Than Answers*, 30 TULSA L.J. 61, 82–85 (1994).

[144] *See id.*

[145] *See Cherokee Nation*, 30 U.S. (5 Pet.) at 17 (establishing the "trust" doctrine by stating: "[The tribes'] relation to the United States resembles that of a ward to his guardian. They look to our government for protection; rely upon its kindness and its power; appeal to it for relief to their wants; and address the president as their great father.").

over time to protect such property and preserve it for the continued use and benefit of tribal members.[146] The unilateral transformation of communally held tribal property into private and fully alienable rights was the policy of the allotment era, and resulted in disastrous land losses for the tribes. Thus, any mechanism for marketing tribal water will have to take into account and protect the long-term beneficial use of such water for the tribes and their members; it will have to account for the governmental status of the tribes' ownership of water and accommodate this special status into any system.

Naturally, the reserved "governmental" status of tribal water cuts somewhat against the grain of the underlying ideology of water marketing, which sees private ownership and free alienability of resources as the key to effective and efficient allocation of resources. Yet this is where the transboundary nature of the resource and tribes' anomalous, transboundary nature are most significant. Markets for a resource that moves across boundaries are impacted by such boundaries; different approaches to the same resource as it crosses such borders make the administration and effective implementation of marketing systems much more difficult. Tribes, however, as described above, possess a unique legal status that spreads their governmental authority across borders; such status actually puts tribes—as governments, not simply as market players—in the kind of administrative transboundary position that might be more amenable to a market approach than the strict, territorial-based sovereignty within which states are fixed.

Second, the marketing approach is being applied increasingly to deal with complex issues of water allocation, including protection of instream flows.[147] Although there are still significant concerns with marketing as a mechanism for allocating water,[148] various systems of "regulated" water markets continue to be proposed and developed as a means of addressing allocation and waste problems.[149] Because of their early priority dates and often sizable quantity, Indian reserved rights to water will have to figure significantly in any allocation and management determinations; any system—marketing or other—that seeks to resolve such issues must involve and incorporate tribal rights.

Moreover, instream flows protection and allocation present the core issues involved in water's transboundary nature, since protecting and allocating such flows involve cross-border cooperation and monitoring. Whether markets can effectively address this issue is a complex and difficult question. Again, the

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[146] *See, e.g., Protecting the Attributes of Native Sovereignty*, *supra* note 89.

[147] *See* 2 WATERS AND WATER RIGHTS, *supra* note 48, at 374–94.

[148] *See id.* at 373–74 (quoting Eric T. Freyfogle, *Context and Accommodation in Modern Property Law*, 41 STAN. L. REV. 1529, 1543–45 (1989)).

[149] *See id.* at 383–94 (describing various water marketing systems, such as water banks and leasing, financing of water conservation measures, dry year options and subordination agreements, water exchanges, and temporary reallocation).

transboundary nature of the tribal rights, along with their size, scope and priority date, makes a strong case for the recognition and integration of tribal governmental authority into any attempt to implement a marketing approach to allocation and protection issues.

Third, while the western states' doctrine of appropriation had historically been unfriendly toward instream flows, concerns raised by environmentalists, commercial and recreational fishers, and, more recently, the Endangered Species Act have lead to an increased recognition of the need to protect instream flows.[150] While, as discussed above, many tribes have instream flow rights, tribes who have reserved rights with senior priority dates have a valuable resource that could, if such rights were marketable, be used for instream flows. Again, since other appropriative water rights holders can and have obtained financial or other recompense for the instream use of their waters,[151] tribes with such rights should also be able to obtain compensation for the use of their rights to benefit fisheries and other instream uses.

The size and complexity of tribal water rights, along with the tribes' status as sovereign governments with authority over such resources, calls for a nuanced approach to marketing. Markets for water are unlike markets for most other goods because of the significant public interest in water as a shared, moving and transboundary resource. Government regulation will likely continue to play a significant role in the development of water marketing as an approach to allocation and protection.[152]

Tribes would not enter such markets as water rights holders, but rather as governments. And as governments, they should have a participatory role in the development and regulation of such markets. The norm for water resources in the western states is that the states own all the water, and as an exercise of sovereignty, states can regulate and modify such use for the public good.[153] The same presumption should work in favor of tribes concerning their reserved water resources: these are resources held by a sovereign government in trust for its people, and the tribes should be able to fashion the systems by which such

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[150] *See* 2 WATERS AND WATER RIGHTS, *supra* note 48, at 7–116.

[151] For example, the Oregon Water Trust is a not-for-profit organization whose primary mission is to protect and enhance fisheries and aquatic life though purchase or other acquisition of consumptive water rights and conversion of such rights to legally protected instream water rights. *See* Leslie B. Bach, Materials Submitted for Third Annual Water Conference at Northwestern School of Law of Lewis and Clark College (May 1–2, 1997) (on file with author). *See also* Jack Sterne, *Instream Rights & Invisible Hands: Prospects for Private Instream Water Rights in the Northwest*, 27 ENVTL. L. 203, 220–22, 226–30 (1997) (describing, respectively, Oregon Water Trust's water rights purchase program and statutory programs for purchase of rights for ownership as instream flows in Arizona and Alaska).

[152] *See* 2 WATERS AND WATER RIGHTS, *supra* note 48, at 370–74 (describing the different levels of market regulation that water market proponents see as necessary; "[m]ost proponents of water marketing, however, favor a more regulated market").

[153] *See id.* at 85–90 (chart summarizing water ownership regimes for the western states).

resources are managed and allocated to maximize the long-term benefit of tribal people.[154]

The tribes' inherent sovereign authority over such resources certainly puts them in a position analogous to that of states (as Congress has recognized in its amendment to the Clean Water Act). As the critical issues of tribal quantification and allocation are worked out, the tribal role in management, protection, use and reallocation of such resources will of necessity become a critical issue in resolving the broader, watershed-wide issues.

B. Instream Flow Rights and Environmental Servitudes: The Science of the Next Millennium

The tribal rights to instream flows and the analogous right to protection of water as habitat off-reservation raise issues not only of law, politics and sovereignty, but of science as well. While the right to protection of fisheries through management of instream flows is well-established, the question of how much water is enough is still at the cutting edge of science. The relationship between quantity of fish and quantity of water is complex, variegated and far from well-understood. Fish survival requires the satisfaction of certain complex and interrelated physiological demands: respiration, involving the extraction and use of dissolved oxygen from the surrounding water; suitable water temperature; nutrition; protection from predators; and the availability of definite hydraulic conditions and substrate types.[155] Stream flow influences each of these factors, as well as their interrelationship.[156]

Various approaches have been developed and implemented in an attempt to quantify the relationship between instream flows and fish. The most well-known approach, and most widely used to date, is the Instream Flow Incremental Methodology (IFIM), which is built around the Physical Habitat Simulation Model (PHABSIM).[157]

The IFIM was originally developed by the United States Fish and Wildlife Service as a methodology for developing instream flow requirements. The IFIM analyzes changes in instream flow conditions and measures the impacts of changes on habitat availability for aquatic species. The IFIM model, as its title suggests, focuses on incremental changes in water quality and provides a mechanism for considering the impacts of various uses and the changes such uses

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[154] *See* Blumm, *supra* note 137, at 476–78 (describing tribal regulatory rights over water and waterways). *See also* 2 WATERS AND WATER RIGHTS, *supra* note 48, at 394 (describing various state schemes for state ownership and control of water).

[155] *See* H.B.N. HYNES, THE ECOLOGY OF RUNNING WATERS 340 (1970).

[156] *See id.*

[157] *See* Cavendish & Duncan, *Use of the Instream Flow Incremental Methodology: A Tool for Negotiation*, 6 ENVTL. IMPACT ASSESSMENT REV. 347 (1986).

have on stream hydrology. The model does not, however, develop a measurable baseline. Thus, while PHABSIM/IFIM employs scientific modeling, it is basically a decision-making process that is based on bargaining, incrementalism, and interdisciplinary problem-solving—an approach that relies on assumptions, subjectivity and judgment.[158] As a number of fish biologists have pointed out, there is, to date, no reliable scientific method for quantifying the relationship between instream flows and fish populations.[159]

In the face of such uncertainty, a group of aquatic biologists have called for an "adaptive management" approach— a conservative, fish-first approach to the issue of fish preservation and enhancement.[160] Adaptive management involves ongoing empirical analysis with the goal of eventually developing reliable modeling techniques,[161] but which requires that agencies first ensure continued fish survival by conservatively applying whatever information is available about flows and fish habitat, and modifying their practices only as further understanding is developed empirically.[162]

The uncertainty of the science of instream flows poses critical questions for the relationship between tribes, states and the federal government. Tribes with instream flow rights or fishery habitat protection rights want to ensure that the fisheries on which their members depend are protected, and that sufficient water is left instream for that purpose. On the other hand, States want some degree of certainty in the quantity of water that such protection will require to assist them in dealing with the difficult political issues of water allocation. Unfortunately, at this point in the development of the applicable science, absolute quantification is simply unavailable. While IFIM offers an incremental approach that incorporates certain scientific methods, the uncertainties of instream flow habitat modeling caution against overreliance on IFIM. Adaptive management, while more politically difficult for states since it is a more conservative approach (for example, it appears to require leaving more, rather than less, water instream), it appears to be an approach that is more amenable to protecting the tribes' senior rights.

Adaptive management is the type of approach that will require an integrated decision-making relationship among the parties. Tribes have a stake in ensuring sufficient water for their fisheries, while states have a stake in the

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[158] *See* Richard Krueger, Increasing Instream Flows, Materials Submitted for Third Annual Water Conference at Northwestern School of Law of Lewis and Clark College, 1997 (on file with author). *See also* Joseph S. McClean, *Streamflow Policy in Vermont: Managing Conflicting Demands on the State's Waters*, 19 VT. L. REV. 191, 221 n.199 (1994) (describing Vermont Agency of Natural Resources' consideration and use of IFIM).

[159] *See* McClean, *supra* note 158. *See also* Daniel T. Castleberry et. al., *Uncertainty and Instream Flow Standards*, SCIENCE NOTES (visited Oct. 8, 1998) <http://www.caltrout.org/logs/82/uncert.htm>.

[160] *See* Castleberry, *supra* note 159.

[161] *See id.*

[162] *See id.*

development of adequate modeling to provide a higher level of certainty and predictability in water allocation. Leaving adaptive management and its attendant development of the necessary science in the hands of one or the other party exclusively will undoubtedly result in credibility problems for whatever science develops. An integrated, co-management approach is the most effective means of ensuring that the necessary science develops with a sufficient level of credibility to provide for efficient and effective use of that methodology.

Incorporating the tribes into the process has additional benefits. Tribal natural resource departments, as well as tribal fishermen, are in the position to engage in site-specific observation and analysis, an essential component of the adaptive management approach. These departments are not only in the position to collect and analyze data, but they also provide critical resources, such as staff time, equipment and location, for the development and testing of empirical observations and theoretical approaches. Moreover, in this kind of context, tribal traditional ecological knowledge can be most relevant and effective. Thousands of years of observation and analysis, embodied in various forms within the tribal society and culture, is the kind of database that can work a long way toward developing the empirical analysis needed for effective and credible modeling.[163]

The relationship between instream flows and fisheries is truly the science of the next millennium. But the science now comes full circle—like the hydrology that is its focus—back to the issues of law, politics and sovereignty. Developing this science will take an integrated, co-management approach involving tribes, states and the federal government. But, further, developing the science of the next millennium must rely on the knowledge gleaned by people who have lived from these waters for the previous millennia.

C. The Clean Water Act and Treatment as States: Transboundary Water Quality and Jurisdiction

The provisions of the CWA for treating tribes as states set the stage for dealing with the complex transboundary issues of water resources for the next millennium. As described above, water quality standards set by tribes for waters within their reservation boundaries will have impacts on water use outside reservation boundaries. The converse is likely to be true as well: downstream states may well set water quality standards that impact the water uses of upstream tribes on their reservations.

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[163] *See generally* Rebecca L. Tsosie, *Tribal Environmental Policy in an Era of Self-Determination: The Role of Ethics, Economics, and Traditional Ecological Knowledge*, 21 VT. L. REV. 225 (1996) (describing function and value of tribal traditional ecological knowledge in dealing with contemporary environmental problems); ROBERT E. JOHANNES, TRADITIONAL ECOLOGICAL KNOWLEDGE: A COLLECTION OF ESSAYS 5–9 (Robert E. Johannes ed., 1989) (describing sources and scientific value of traditional ecological knowledge).

The CWA interjurisdictional provisions appear, at present, to be somewhat clumsy, unwieldy approaches to the issue of transboundary water quality. The clumsiness arises, in significant part, from the anomalous nature of the political system within which we operate: states are subordinate sovereigns to the overarching sovereignty of the U.S. federal government by way of the U.S. Constitution. Tribes, on the other hand, while subordinate to the U.S. in many respects due to their dependent status, are also recognized as inherent sovereign powers that predate and are outside the scope of the Constitutional system.[164] Thus, the CWA system attempts to coordinate the roles of three sovereign entities, each with a different source and scope of sovereignty, and each with varying stakes in the water resources at issue. As more tribes move forward with seeking and obtaining TAS recognition under the Clean Water Act, similar conflicts as seen in *Albuquerque* and *Montana*, will arise.

Yet, conflict may well be avoided by an approach that would incorporate and integrate tribes as full co-managers into the decision-making process for dealing with waterways. There is nothing inherently at odds with tribes as sovereigns attempting to act in the best interests of their people and states attempting to do the same. A significant contributing factor of such antagonism is the continued failure, on the part of the states, to look at the legitimate interests of tribes as sovereigns in the protection and management of water resources.

V. CONCLUSION: PRINCIPLES FOR INTEGRATED CO-MANAGEMENT APPROACHES

The goal of the tribal push for a co-management role over water and other natural resources is aimed at the recognition and integration of tribal concerns, tribal rights and tribal expertise into the management and policy arenas concerning water resources. The era of paternalistic, unilateral decision-making by the federal government is over, superceded by the more forward-looking policy of encouraging the exercise of tribal sovereignty and tribal self-determination. Co-management is the approach that best fits with the modern conception of sovereignty as involving reciprocity and bilateralism.

Integration of tribes as co-managers presents the most effective means of addressing the complex jurisdictional issues discussed above concerning tribal ownership of and authority over transboundary waterways. Rather than perpetuating the adversarial relationship that such boundaries do nothing to circumvent, co-management and integration of responsibilities recognize the transboundary nature of the issues involved in water management and seek the means to address these issues effectively. Integration of tribes as co-managers

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[164] *See generally* Talton v. Mayes, 63 U.S. 376 (1896).

also moves the parties closer to developing more effective measures to deal with the difficult scientific issues involved. Co-management provides a unique opportunity for the application of tribal traditional ecological knowledge to increasingly complex problems that require a broader and deeper understanding of the phenomena at issue.[165]

There is no one-size-fits-all approach to co-management. Each tribe, as a unique, self-determining, sovereign community, has developed its own institutions, resources and procedures. Each tribe's rights are based on legal documents specific to that tribe. Further, the local situation within which each tribe is embedded is unique, with particularized landscapes, resource issues and user groups. Thus, the means by which a particular tribe (or tribes) can be integrated into the decision-making process for water and waterways needs to be developed on a tribe-specific basis.

Nonetheless, some fundamental, overarching principles can be gleaned from the doctrines governing inherent tribal sovereignty, reserved rights and authority over waters and waterways. These principles ought to be used to guide the implementation of tribes as co-managers. I set out four such principles below.

First, as this article has emphasized, the role that tribes play in a co-management regime must be developed in recognition of tribal status as *governmental entities* charged with the responsibility of caring for the tribe's people and their resources. As the Supreme Court has repeatedly recognized, Indian tribes are not private, voluntary organizations, but sovereign governments.[166] The treatment-as-state provisions of the CWA, for example, institutionalize the decision-making authority of tribal governments, and tribe-developed standards are enforceable, applicable even outside reservation boundaries. Co-management, recognized and implemented by the CWA, emphasizes that the various government entities who have authority over a particular resource should come together as equal sovereigns, protecting and respecting the interests of their respective constituents. Such emphasis on the tribe as government can serve to ensure the protection of the tribal interest in resources critical to the long-term economic security, political integrity, and health and well-being of Indian tribal communities.

Second, tribes should be made an integral part of the decision making process. The very idea of co-management means that tribes participate in the

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[165] *See* Tsosie, *supra* note 163 (stating that tribal "environmental self-determination" is rooted, in significant part, in tribal traditional values toward land, community and resources).

[166] *See* United States v. Mazurie, 419 U.S. 544, 557 (1975) ("Indian tribes are unique aggregations possessing attributes of sovereignty over both their members and their territory . . . . Indian tribes within 'Indian country' are a good deal more than 'private, voluntary organizations . . . .'") (citations omitted). *See also* McClanahan v. Arizona State Tax Comm'n, 411 U.S. 164, 172 (1973) ("It must always be remembered that the various Indian tribes were once independent and sovereign nations, and that their claim to sovereignty long predates that of our own Government.").

decision-making process, sitting at the table from the earliest stages of policy formulation, problem identification and development of solutions to water quality and water allocation problems. The size and scope of the rights of the various tribes, their role as policy-makers, and their localized institutions and infrastructure emphasize the need for development of co-management arrangements that integrate the tribes into the beginning of the decision-making process.

Such front loading of tribal participation not only reduces the potential for long-term, disruptive conflict over policies and proposed solutions, it also facilitates the incorporation of critical information and technical expertise possessed by the tribes. Some courts have already recognized the necessity of incorporating tribes as participants in the decision-making process where such decision will impact tribal reserved rights.[167] Such a role would facilitate the kind of meaningful input that could guide decision-making over resource use over a wider area, taking into account a broader perspective on resource conditions and impacts of various activities on those conditions.

Third, the input provided by tribes should be considered as expert information and given a certain degree of deference. The importance of incorporating tribal input as expert information when federal decision-making will impact tribal reserved rights has been recognized by the federal courts.[168] The default deference generally given to federal agencies in technical and policy-making matters[169] does not apply in the tribal reserved rights context, where tribes have unique, particularized interests as well as localized knowledge and technical expertise that may well surpass that possessed by federal agency staff decision-makers.

The procedures established by the Endangered Species Act (ESA) for incorporating the expert opinions of the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS) provide one useful model for structuring incorporation of and deference to tribal expertise.[170] Under the ESA, when the actions of a federal agency may potentially impact the

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[167] *See* Klamath Tribes v. United States of America, Civ. No. 96-381-HA, 1996 WL 924509, at *8 (D. Or. Oct. 1996) (enjoining Forest Service from proceeding with timber sales until agency consults with tribe on a government-to-government basis to ensure that potential impacts to reserved rights resources are avoided or mitigated "to the fullest extent possible") (quoting *Pyramid Lake Paiute Tribe*, 354 F. Supp. at 252).

[168] *See* Idaho Dep't of Fish and Game v. National Marine Fisheries Serv., 850 F. Supp. 886, 900 (D. Or. 1994) (requiring NMFS to consider tribal input when making decisions concerning threatened and endangered fish in Columbia River system), *remanded with instructions to vacate as moot*, 56 F.3d 1071 (9th Cir. 1995) (requiring Forest Service to incorporate tribal input into decision-making process for lands on which tribes have reserved right to hunt and fish).

[169] *See, e.g.*, Mount Graham Red Squirrel v. Espy, 986 F.2d 1568, 1571 (9th Cir. 1993) ("Deference to an agency's technical expertise and experience is particularly warranted with respect to questions involving . . . scientific matters.") (quoting United States v. Alpine Land and Reservoir Co., 887 F.2d 207, 213 (9th Cir. 1989)).

[170] *See* 16 U.S.C. § 1536 (1996).

population or critical habitat of a listed species, the agency must consult with either the NMFS (if the species is an aquatic species) or the USFWS (if it is a terrestrial species).[171] The ESA requires the expert agency to issue a biological opinion, which determines whether the project will result in adverse impacts to listed species in violation of the ESA.[172] If the agency does make such a finding, it must suggest "reasonable and prudent alternatives" to the proposed action to avoid such impacts.[173] The biological opinion is given great deference as the determination of the expert agency; a failure by the action agency to follow the recommendations of the biological opinion has been found to be sufficient evidence to enjoin a project.[174] One potential for tribal co-management strategy concerning transboundary water resources, impacting tribal waters or other reserved rights resources, would be to incorporate the tribe as an expert agency with regard to the impact of a particular activity, plan or policy on tribal rights and resources.

Fourth, a co-management regime should incorporate mechanisms for resolving disputes and differences in opinion and approaches among the co-managing parties. As various stakeholders with interests and perspectives that might be at odds, the parties to a co-management regime must develop methods and mechanisms to deal with disputes. Unilateral decision-making by one party upsets the balance of power between parties. One useful model for integrated decision-making and dispute resolution is the Columbia River Fisheries Management Plan (CRFMP), a complex arrangement for the management of Indian and non-Indian fisheries on the Columbia River that involves four Indian tribes, three states and two federal agencies.[175] The CRFMP, developed jointly by the parties, contains detailed management provisions and goals for fisheries in the Columbia River and its tributaries.[176] The CRFMP also sets out procedures

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[171] *Id.* § 1536(a)(2), (b), (c). For a detailed discussion and analysis of the ESA's consultation provisions, see DANIEL J. ROHLF, THE ENDANGERED SPECIES ACT: A GUIDE TO ITS PROTECTIONS AND IMPLEMENTATION 105–36 (1989).

[172] *See* 16 U.S.C. § 1536(b)(2), (b)(3)(A).

[173] *Id.* § 1536(b)(3)(A).

[174] *See* Village of False Pass v. Watt, 565 F. Supp. 1123 (D. Alaska 1983), *aff'd*, 733 F.2d 605 (9th Cir. 1984); North Slope Borough v. Andrus, 486 F. Supp. 332 (D.D.C. 1980), *aff'd in part, rev'd in part on other grounds*, 642 F.2d 589 (D.C. Cir. 1980). *See also* Sierra Club v. Marsh, 816 F.2d 1376, 1385–86 (9th Cir. 1987) (holding Corps of Engineers' failure to carry out a mitigation measure prescribed by USFWS in biological opinion is considered to violate Endangered Species Act); Bennett v. Spear, 520 U.S. 154, 169–71 (1997) (noting that expert agency biological opinion has a "powerful coercive effect" and that it "alters the legal regime to which the action agency is subject"). *But see* Tribal Village of Akutan v. Hodel, 869 F.2d 1185 (9th Cir. 1988) (holding that agency that did not follow expert agency biological opinion, but instead developed its own protective measures for listed species, was permitted to proceed).

[175] *See* A Plan for Managing Fisheries on Stocks Originating from the Columbia River and its Tributaries above Bonneville Dam (Feb. 25, 1977); Columbia River Fish Management Plan (Oct. 7, 1988); United States v. State of Oregon, 699 F. Supp. 1456, 1458 (D. Or. 1988), *aff'd*, 913 F.2d 576 (9th Cir. 1990) (approving an amended comprehensive plan). *See also* Blumm & Swift, *supra* note 110, at 460–462.

[176] *See* Columbia River Fish Management Plan, *supra* note 175, at 17–40.

through which the parties, including the four treaty tribes, establish fishery seasons and harvest limits, applying to non-Indian as well as Indian fisheries on the Columbia.[177]

Perhaps most critically, the CRFMP contains detailed provisions for dispute resolution among the parties, recognizing the likelihood of disagreement on technical and policy matters.[178] The CRFMP provides for an internal dispute resolution mechanism through which policy or technical disputes are brought before the Policy Committee, a body comprised of representatives appointed by each party, and charged with the task of "facilitat[ing] cooperative action by the Parties."[179] Moreover, the CRFMP remains under the continuing jurisdiction of the federal District Court for Oregon, and a special magistrate is available to hear and resolve disputes between the parties that cannot be resolved through the internal dispute resolution process.[180]

Integration of tribes into the management processes for transboundary waters and waterways, if these principles are followed, suggests approaches that permit us to get "outside the box" of absolute territorial sovereignty. One promising avenue for co-management of such shared, transboundary resources is indicated by Elinor Ostrom's analysis of various successful community-based mechanisms developed for the management of "common-pool resources" (CPR).[181]

Ostrom looks at a number of long-term, community-based, shared management systems for such resources, which have provided ongoing economic benefit along with resource sustainability. Perhaps most significant among the examples that she analyzes (for the purposes of river co-management) are the water distribution and allocation systems developed and used in both Spain and the Phillippines.[182] These long-enduring systems were developed at the community level and have managed to allocate scarce water resources, protect resource quality and sustainability, and mediate disputes among various stakeholders for centuries. These systems all involve some mixture of communal property and private property rights, water allocation rules, participatory requirements for working on system elements, and integrated administrative and

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[177] *See id.* at 48–62.

[178] *See id.* at 54–56.

[179] *Id.*

[180] *See id.* at 7, 56.

[181] *See generally* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990).

[182] *See id.* at 69–88. Some of the *huerta* irrigation systems in Spain that Ostrom analyzes have been in place for over 500 years; her data on the *zanjera* irrigation communities of the Phillippines indicates that they have been in place for at least 350 years. *See id.* Ostrom also analyzes power allocation and dispute resolution concerning ground water systems in California as one of a number of "failed" or "fragile" attempts at CPR management. *See id.* at 146–49.

oversight authority.[183] The systems are perhaps most notable for dealing with potential system abuse problems by its individual participants through a variety of effective measures, including participant-based monitoring and enforcement, collective decision-making regarding rules, and public accountability.[184]

While Ostrom emphasizes that her study was limited to smaller communities and institutions,[185] a number of the "design principles" that she outlines for successful CPR systems[186] could apply to integrated co-management of larger, transboundary water systems in the United States. These principles include: congruence between appropriation and provision rules and local conditions; collective choice arrangements, whereby participants affected by operational rules can participate in their development and modification; monitoring by participants and monitors accountability to the group and the system; and conflict resolution mechanisms.[187]

These community-based principles dovetail well with an approach that incorporates tribal governments as co-managers. Tribal traditional ecological knowledge and localized technical expertise provide a basis for developing policy and management approaches congruent with long-term understanding of local conditions. Integration of tribes as decision-makers would be a key collective choice mechanism, ensuring greater participation in rule-making and modification. Reliance upon tribal monitoring ensures monitoring participation by an extraordinarily significant localized user group. Finally, development of dispute resolution mechanisms that incorporate tribes builds greater legitimacy into whatever system is ultimately developed and implemented.

Ostrom notes two other critical principles. First, the system is operated within "clearly defined boundaries."[188] Obviously, such a requirement presents a problem when dealing with a transboundary resource like water. However, as discussed above, the transboundary nature of tribal rights and authority suggests a method for broadening boundaries to include larger riverine systems—a method and means of recognizing the need for understanding the full scope of a riverine system and all its users and uses. The *huertas* of Spain and the *zanjeras* of the Phillippines both incorporate recognition of the larger system within which their methods of distribution and allocation must work, addressing the issues of boundaries by nesting various institutions at various levels.[189]

This "institutional nesting" is Ostrom's other critical principle for

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[183] *See id.*
[184] *See id.*
[185] *See id.* at 26.
[186] *See id.* at 88–102.
[187] *See id.*
[188] *Id.* at 91–92.
[189] *See id.* at 69–88.

managing larger common-pool resources.[190] In analyzing these larger systems, Ostrom notes that provisions for appropriation, monitoring, allocation, enforcement, conflict resolution and governance activities are organized in multiple layers of nested enterprises.[191] Again, building tribes into an integrated co-management framework would of necessity require such nesting, given the multiple jurisdictions as well as multiple layers of authority involved in transboundary water management. Just as a single, centralized authority was not the optimal situation for the water systems that Ostrom analyzed, a centralized authority would not involve the kind of power sharing and integrated decision-making necessary to make for a successful management system for transboundary waterways variously intersected with significant tribal jurisdictional issues.

Professor Ostrom's approach is far from the only "new" approach being considered and analyzed for a new set of institutional arrangements and policy directives for managing shared and transboundary resources. The "adaptive management" approach discussed in relation to fisheries habitat has been put forth in a number of contexts as a new institutional framework for natural resource management.[192] The movement for biodiversity and ecosystem management has also stimulated discussion and analysis of various other institutional arrangements and policy approaches for dealing with similar transboundary issues.[193] Essential to all of these approaches is the recognition of the interjurisdictional nature of the complex issues involved, and a requirement that policy-makers recognize and implement integrated, power sharing strategies that would take into account the input and information of people with long-term, on-the-ground relationships with and knowledge of the resources.[194] All of these

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[190] *Id.* at 101–02.

[191] *See id.* Ostrom, noting that "[a]ll of the more complex, enduring CPRs meet this last design principle," summarizes these systems as follows:

> In the Spanish *huertas*, for example, irrigators are organized on the basis of three or four nested levels, all of which are then also nested in local, regional and national governmental jurisdictions. There are two distinct levels in the Philippines federation of irrigation systems. The problems facing irrigators at the level of a tertiary canal are different from the problems facing a larger group sharing a secondary canal. Those, in turn, are different from the problems involved in the management of the main diversion works that affect the entire system. Establishing rules at one level, without rules at the other levels, will produce an incomplete system that may not endure over the long run.

Id. at 102.

[192] *See, e.g.*, REED F. NOSS & ALLEN Y. COOPERRIDER, SAVING NATURE'S LEGACY: PROTECTING AND RESTORING BIODIVERSITY 298–324 (1994) (discussing adaptive management strategies and biodiversity preservation issues).

[193] *See, eg.*, BIODIVERSITY AND THE LAW (William J. Snape III ed., 1996) (discussing concept of "sustainable dynamic areas" that was developed in a conference involving conservation groups and the United States Forest Service).

[194] For example, Ostrom notes, in a discussion of the uncertainties involved in CPR management arising from lack of knowledge, that such uncertainties can be reduced "as a result of skillful *pooling and blending of scientific knowledge and local time-and-place knowledge*." OSTROM, *supra* note 181, at 34 (emphasis added).

approaches suggest new roles for institutional and governmental actors that recognize the importance of power sharing and integration, a recognition that clearly calls for incorporation of Indian tribes into such management systems and institutional arrangements.

The Twenty-First Century will open with the great potential for conflict over use, management, allocation and protection of transboundary waters and waterways. The longstanding dominant interests in the United States' waterways—irrigation, hydropower and municipal use—now face a much more crowded field that involves concern for water quality and for instream flows and uses. The potential for conflict, however, also presents a great potential for integrated decision-making among the various interests involved. The growing recognition of the integrated nature of water use and allocation, of watershed function, and of the complexity of ecosystems, provides ample room for movement in a new direction.

Tribal concerns and legal rights cut across all of these interests. Inherent tribal sovereignty, as recognized by case law and statute, will ensure that the tribes play a significant role in the ongoing struggle to determine how water is used, how much is used, and for what purposes. Real, integrated problem-solving will require true respect and government-to-government coordination among the various sovereign entities involved. No solution will work unless and until the significant tribal interests are recognized and fully integrated into any system or process for dealing with these issues.

Perhaps most importantly, the unique and anomalous nature of the tribal interests force policy-makers to consider such matters in a new light, that exposes solutions beyond the often ossified thinking on matters of waterway management and protection. Integration of tribes as co-managers—from a legal, policy, and scientific perspective—allows us to reconceptualize and reconfigure the legal and institutional arrangements around our waterways that permit a fuller consideration of their transboundary, interjurisdictional character.